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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,309	11/30/2001	Yoshihito Ookawa	33082M110	9768

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EXAMINER

CROWELL, ANNA M

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/980,309	OOKAWA ET AL.	
	Examiner	Art Unit	
	Michelle Crowell	1763	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,9-12 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,9-12 and 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3, 5, 7</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, 9-12, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grimbergen et al. (U.S. 6,390,019) in view of Deguchi et al. (Japanese Patent Publication 06-021003).

Referring to Figures 1 and 3a, column 6, line 28-column 7, line 19, column 7, line 36-column 8, line 52, column 10, lines 10-41, and column 12, lines 11-30, Grimbergen et al. discloses a plasma processing unit comprising: a processing container 35, a first electrode 55 disposed in the processing container, the first electrode having: a space connected to a process-gas supplying tube 80 that supplies a process gas, a plurality of gas-dispersion holes formed on one side with respect to the space for supplying the process gas into the processing container, and an opening 145 for a measurement light formed on one side with respect to the space (col. 7,

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line 2-19). Note, Figure 1 displays an inductively coupled apparatus, however alternatively a capacitively coupled system may be used wherein the ceiling 55 acts as the first electrode (col. 7, lines 2-19). Additionally, the first electrode 55 may include a showerhead gas dispersion holes (col. 6, lines 50-53).

Furthermore, Grimbergen et al. discloses a second electrode 45 arranged on one side of and a predetermined gap away from the gas-dispersion holes and the opening of the first electrode (col. 7, lines 2-5); a power source unit 104 that applies electric power between the first electrode and the second electrode and that generates plasma between the first electrode and the second electrode (col. 7, lines 11-17); and a window member 130 having an optical path that adjacently communicates with the other side of the opening for measurement light (col. 7, line 60-col.8, line 52).

With respect to claim 2, the processing unit includes an opening 145 and the optical path 145 having an aspect ratio not less than 7 (col. 9, line 60-col. 10, line 41, specifically, col. 10, lines 8-9, 20-22, 39-41).

With respect to claim 3, the processing unit includes a laser-measurement unit 25 that emits a laser beam into the processing container 35 through the optical path 145 of the window member and that receives an measure reflection of the beam from the processing container through the optical path (col. 7, line 60-col. 8, line 29, col. 11, line 46-col. 13, line 12, specifically col. 12, lines 11-30 and col. 13, lines 10-12).

With respect to claim 4, the opening is formed in the central portion of the first electrode 55 (Fig. 1, 3a, 3b). Furthermore, Figure 1 fails to display one or more additional openings formed in the central portion of the first electrode, however it would have been obvious to one of

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ordinary skill in the art at the time of the invention to modify Figure 1 to include one or more additional openings formed in the central portion of the first electrode as shown in Figures 3a and 3b in order to improve transmission of light into and out of the process container (col. 9, line 67-col.10, line 5).

With respect to claims 9-12 and 16-19, specifically claim 9, Figure 1 fails to show a transparent plate arranged with an inclination with respect to a plane perpendicular to the optical path, on the opposite side to the opening side of the optical path, however it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Figure 1 to include a transparent plate arranged with an inclination with respect to a plane perpendicular to the optical path, on the opposite side to the opening side of the optical path as shown in Figure 3a in order to achieve greater signal gain in process monitoring (col. 9, lines 21-37).

Grimbergen et al. fails to teach a window member having a protrusion and a sealing member.

Referring to Drawings 2 and 3, and the abstract, Deguchi et al. teaches that it is conventionally known to include a window member having a protrusion 42 and sealing member 47 in a plasma processing unit that comprises an optical monitoring system. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the window of Grimbergen et al. with the window of Deguchi et al. since it conventionally known and is a suitable way to install a window for optical monitoring in a plasma processing apparatus and since leakage of electromagnetic waves is prevented from the window.

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4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (Japanese Patent Publication 06120177) in view of Deguchi et al. (Japanese Patent Publication 06-021003).

Referring to Drawing 1, abstract, and paragraphs [0026]-[0031], Kobayashi discloses a plasma processing unit comprising: a processing container 1, a first electrode 8 disposed in the processing container, the first electrode having: a space connected to a process-gas supplying tube that supplies a process gas, a plurality of gas-dispersion holes 10 formed on one side with respect to the space for supplying the process gas into the processing container, and an opening for a measurement light formed on one side with respect to the space (paragraphs [0003]-[0005], [0027]-[0028]). Note, Figure 1 fails to display a process gas supply tube however in order for gases to enter the gas holes 10 it must be connected to a process gas supply tube.

Kobayashi, further discloses a second electrode 2 arranged on one side of and a predetermined gap away from the gas-dispersion holes and the opening of the first electrode (par. [0026]); a power source unit 6 that applies electric power between the first electrode and the second electrode and that generates plasma between the first electrode and the second electrode (par. [0026]); and a window member 12 having an optical path that adjacently communicates with the other side of the opening for measurement light.

Kobayashi fails to teach a window member having a protrusion and a sealing member.

Referring to Drawings 2 and 3, and the abstract, Deguchi et al. teaches that it is conventionally known to include a window member having a protrusion 42 and sealing member 47 in a plasma processing unit that comprises an optical monitoring system. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the window

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of Kobayashi with the window of Deguchi et al. since it conventionally known and is a suitable way to install a window for optical monitoring in a plasma processing apparatus and since leakage of electromagnetic waves is prevented from the window.

5. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekine et al. (U.S. 6,390,019) in view of Kobayashi (Japanese Patent Publication 06120177) and Deguchi et al. (Japanese Patent Publication 06-021003).

Referring to Figure 1, column 16, line 27-column 18, line 14, Sekine et al. discloses a plasma processing unit comprising: a processing container 1, a first electrode 7 disposed in the processing container, the first electrode having: a space connected to a process-gas supplying tube 4 that supplies a process gas, and an opening for a measurement light formed on one side with respect to the space (col. 16, lines 28-45).

Sekine et al. further comprises a second electrode 2 arranged on one side of and a predetermined gap away from the gas-dispersion holes and the opening of the first electrode (col. 16, lines 30-31); a power source unit 5 that applies electric power between the first electrode and the second electrode and that generates plasma between the first electrode and the second electrode (col. 16, lines 32-35); and a window member 50 having an optical path that adjacently communicates with the other side of the opening for measurement light.

With respect to claim 3, the processing unit includes a laser-measurement unit 51 and 52 that emits a laser beam into the processing container 1 through the optical path of the window member 50 and that receives an measure reflection of the beam from the processing container through the optical path (col. 18, lines 10-14).

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Sekine et al. fails to teach an electrode having a plurality of gas-dispersion holes.

Referring to paragraph [0030], Kobayashi teaches that it is conventionally known to include a plurality of gas dispersion holes to ensure that the gas distribution is uniform. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a plurality of gas-dispersion holes to the electrode of Sekine et al. as taught by Kobayashi to ensure that the gas distribution is uniform.

Sekine et al. fails to teach a window member having a protrusion and a sealing member.

Referring to Drawings 2 and 3, and the abstract, Deguchi et al. teaches that it is conventionally known to include a window member having a protrusion 42 and sealing member 47 in a plasma processing unit that comprises an optical monitoring system. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the window of Sekine et al. with the window of Deguchi et al. since it conventionally known and is a suitable way to install a window for optical monitoring in a plasma processing apparatus and since leakage of electromagnetic waves is prevented from the window.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tanaka '188, Herchen et al. '297, and Curtis '068 show plasma processing units having a laser measurement device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC *ame*
August 20, 2003

Alejandro
LUZ ALEJANDRO-MULERO
PRIMARY EXAMINER